

Supplementary Material: Organic Matter Assessment and Paleoenvironmental Changes of the Middle Jurassic Main Source Rocks (Khatatba Formation) in the North Western Desert, Egypt: Palynofacies and Palynomorph Perspectives

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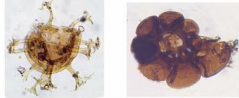

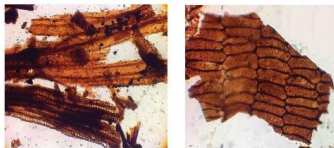
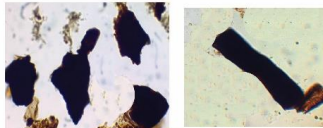
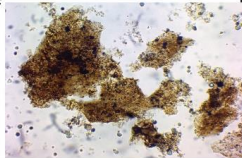
Palynofacies (kerogen) groups		
Structured particulate organic matter	palynomorph group	<p>Palynomorph group refers to all the organic walled microfossils that remain after palynological preparation . Palynomorphs are subdivided into three subgroups</p>  <p>1-Terrestrial palynomorphs (sporomorphs): includes all terrestrial spores and pollen grains. Spores are produced by Bryophyte and pteridophyte land plants, while pollen grains are produced by gymnosperm and angiosperm land plants.</p>
		<p>2- Marine palynomorphs: includes dinoflagellate cysts, foraminiferal test lining (FTL), acritarchs, scolecodonts and chitinozoa.</p> 
		<p>3- Fresh water palynomorphs: includes fresh water algae (Chlorococcale Algae) such as Pediastrum and Botryococcus.</p> 
	Phytoclast group	<p>1. Translucent phytoclasts: include structured particles which have brown color, this structured phytoclasts are derived from lignified tissue of both gymnosperm and angiosperm plants, such as woody tissues (tracheid) and cuticles (epidermal tissues) which have yellow to pale brown color, and derived mainly from branches or leaves of plants.</p> 
		<p>2. Opaque phytoclasts: include black to dark brown structured terrestrial phytoclasts without any internal structures , derived from oxidation of the translucent phytoclasts during transportation accompanied by fractionation and alteration during sedimentation). There are two types of opaques according to their shape, lath-shaped opaques (the long axis > twice the short axis) and equidimensional opaques (equate shape)</p> 
Non-structured particulate organic matter		<p>Amorphous organic matter (AOM) group: it is the most common organic matter that formed under anoxic marine condition It has not any definite botanical features or internal fabric, and usually appears without any distinct shapes and lack a defined sharp outline It is derived from algae and bacteria,</p> 

Figure S1. Shows various components of particulate organic matter (POM) under transmitted white light microscopy. POM includes three main palynomorphs (marine and terrestrial palynomorphs, including freshwater algae), phytoclasts (translucent and opaque phytoclasts), and amorphous organic matter. Palynofacies analysis of POM was conducted based on the former three groups following the approach of Tyson (12,13).